The Zha et al. patent discloses a membrane module 4 that includes a bundle of hollow fibre membranes 5 extending longitudinally between upper and lower potting heads 6, 7. A porous tube 16 may be inserted into the center of the membrane module 4.

Neither the '074 reference nor the Zha patent disclose or suggest an "injection means for injecting . . . gas to a central portion of [a] plurality of hollow fiber membranes . . . wherein the gas . . . spreads said plurality of hollow fiber membranes outwardly." The office action incorrectly suggests that this claimed feature is disclosed in the '074 patent with reference to either the raw fluid inlet 1 or the gas supply inlet 4. Applicant respectfully disagrees.

First, the raw fluid inlet 1 in the '074 reference is not an "injecting means for injecting *gas*" as recited by claim 2. (*Emphasis added*) Instead, the raw fluid inlet 1 merely provides a path for raw fluid to enter the housing 6.

Second, the gas that passes through the gas supply inlet 4 in the '074 reference does not "spread [the] hollow fiber membranes outwardly," as recited by claim 2. Instead, according to the '074 reference:

> "[d]uring the backwash process . . . gas is supplied through the gas supply inlet 4 . . . in order to cause a reverse flow of filtered fluid stored in the storage space 5 and thereby remove the dirt . . . which have adhered to the to the surface of the membranes. The removed dirt, etc. is discharged outside the hollow fiber membrane module through the raw fluid outlet 2." (*See* page 3 of the '074 translation, lines 31 – 36)

The gas does not "spread [the] hollow fiber membranes outwardly" as recited by claim 2.

One of skill in the art would recognize that certain advantages may be realized by the claimed subject matter. For example, the hollow fiber membranes may remain clean for an extended period of time. This may be due to, for example, the highly turbulent nature of the fluid/gas mixture inside the filter cylinder during filtering, the frequent (nearly continuous) fluttering of the hollow fiber membranes due to the turbulence, or the gas bubbles moving

through the fluid further assisting in removing dirt from the hollow fiber membranes. Such improved cleanliness may, in some instances, result in improved filtering efficiency and may also extend the period of time between required maintenance sessions of the filter device.

The Office Action suggests that certain aspects of the claim language should not be considered in determining the patentability of the claims because they describe "process." For example, the Office Action states:

> "the floating bubbles spreading the fibers (as in claim 14) and removing the deposits is 'process.' Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself." (*Some internal quotations omitted*)

However, the claim 2 limitations discussed above, specifically, an "injection means for injecting . . . gas to a central portion of [a] plurality of hollow fiber membranes . . . wherein the gas . . . spreads said plurality of hollow fiber membranes outwardly" are not product-by-process limitations and should be factored into the claim's patentability determination.

A product-by process claim "is one in which the product is defined at least in part in terms of the method or process by which it is made." *Bonito Boats v. Thunder Craft Boats, Inc.* 489 U.S. 141, 159 (1989) (citing D. Chisum, Patents § 8.05, p. 8-67 (1988)). In the present case, the filter device recited in claim 2 is not being defined in terms of the method or process by which the filter device is made. Instead, the features discussed above describe elements that are arranged to interact in a particular manner during operation of the filter device. Accordingly, these limitations should be considered in making a patentability determination.

Each of independent claims 4, 7 and 14 recite limitations that are similar to the limitations discussed above with regard to claim 2. Accordingly, these claims should also be allowable for at least the same reasons as claim 2. Claims 5, 8, 9, 10 and 11 each depends from an allowable claim and should therefore also be allowable.

Independent method claim 13 recites a method that includes "providing a plurality of hollow fiber membranes . . . having . . . a second end that is free; enabling the free ends to spread . . . injecting . . . gas into a central portion of [a] plurality of hollow fiber membranes; and causing the . . . gas to radiate outwardly." For reasons similar to those discussed above, Applicant submits that neither the '074 reference nor the Zha reference discloses or suggests such features. Accordingly, Applicant respectfully submits that claim 13 also is allowable.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

Enclosed is the required $120 fee for the Petition for Extension of Time. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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